We claim:-

1. A process for purifying isocyanates, wherein

   a) a stream (1) containing isocyanate, higher- and lower-boiling components and unvaporizable residue is separated, in a distillation comprising at least one theoretical plate, into a part-stream (2) which contains the unvaporizable residue and isocyanate and into a vapor stream (3) containing isocyanate and low boilers,

   b) the unvaporizable residue in the part-stream (2) is kept separate from the vapor stream (3) and/or from streams which at least partly contain the vapor stream (3),

   c) at least one further isocyanate-containing vapor stream (4) and a stream (8) substantially containing unvaporizable residue are separated from the part-stream (2) and

   d) the isocyanate-containing vapor stream or streams (4) and the vapor stream (3) from a) are separated into three individual streams (5, 6, 7) having different boiling ranges by distillation, the lowest-boiling stream (5) containing a substantial part of the low boiler content of the crude isocyanate stream (1), the highest-boiling stream (7) containing a substantial part of the high boiler content of the crude isocyanate stream (1) and the medium-boiling stream (6) substantially containing desired product.

2. A process as claimed in claim 1, wherein step c) comprises a falling-film evaporator, rising-film evaporator, thin-film evaporator, long-tube evaporator, helical tube evaporator, forced-circulation flash evaporator or paddle dryer.

3. A method as claimed in any of the preceding claims, wherein step a) comprises a thin-film evaporator, rising-film evaporator, falling-film evaporator, long-tube evaporator or forced-circulation flash evaporator.

4. A process as claimed in any of the preceding claims, wherein step d) is carried out in at least one rectification apparatus having 2 – 40 theoretical plates.

5. A process as claimed in any of claims 1 to 4, wherein step d) is carried out in two stages by a procedure in which, in a first distillation apparatus d1), the vapor stream (4) is separated into a high-boiling stream (7), which substantially contains high boilers, and into a further residual stream which, together with the residual stream (3), is separated in a

further distillation apparatus d2) into the low-boiling stream (5) and into the medium-boiling pure isocyanate stream (6).

6. A process as claimed in any of claims 1 to 4, wherein step d) is carried out in one stage by a procedure in which the two streams (4) and (3) are separated together in one distillation apparatus by rectification.

7. A process as claimed in claim 6, wherein step d) is carried out in a dividing wall column.

8. A process as claimed in any of the preceding claims, wherein the isocyanate has been prepared in a phosgenation.

9. A process as claimed in claim 8, wherein the crude isocyanate feed (1) contains no substantial amounts of hydrogen chloride, phosgene and solvent.

10. A process as claimed in claim 1, wherein,
for carrying out the process step a), the crude isocyanate stream (1) is fed to an evaporation, from which a part-stream (2) containing the unvaporizable residue is taken off and from which a residual stream (3) is taken off in gaseous form,

for carrying out process step c), the part-stream (2) is fed to a paddle dryer (11) for producing the isocyanate-containing vapor stream (4), from which furthermore a high-boiling residue stream (8) which substantially comprises unvaporizable residue is taken off,

the streams (3) and (4) or their condensate being purified in a dividing wall column (14) comprising evaporator (20), condenser (22) and internals (21) with separation activity, a low boiler stream (5) being taken off at the top (15) of the dividing wall column (14), the pure isocyanate stream (6) being taken off on that side of the dividing wall (18) which is opposite the feed, and a high boiler stream (7) being taken off at the bottom (19).

11. A process as claimed in claim 1, wherein
a crude isocyanate stream (1) is first fed to the left feed space of a dividing wall column (14) comprising internals (21) with separation activity, condenser (22) and two evaporators (10) and (20), which is designed so
- that the dividing wall (18) is continued to the base so that two separate bottoms (19a) and (19b) result, each of which is connected to the evaporator (10) or (20), and
- that no condensate stream can flow from the condenser (22) of the dividing wall column (14) into the left feed space for the crude isocyanate stream (1),

the separation procedure in the left feed space of the dividing wall column (14) having internals (21) with separation activity being carried out in a pure stripping distillation setup, and a part-stream (2) comprising the unvaporizable residue being taken off from the bottom (19b) of the left feed space and the vapor stream (3) passing over from the left feed space into the remaining space of the dividing wall column without condensate entering the left feed space,

the part-stream (2) containing the unvaporizable residue then being fed to process step c) in which, in an evaporation, a first predominantly isocyanate-containing vapor stream (4a) is produced and the discharge stream (26) whose content of this vapor stream has been reduced is then fed to a paddle dryer (11), at the top of which a further predominantly isocyanate-containing vapor stream (4b) is produced and a stream (8) containing predominantly unvaporizable residue is removed,

after which the two isocyanate-containing streams (4a) and (4b) are, if required, condensed and fed to the right feed space of the dividing wall column (14), where they are separated together with the stream (3) into a low boiler stream (5) at the top (15) of the dividing wall column, a high boiler stream (7) in the right bottom (19a) of the column and a pure isocyanate stream (6).